REMARKS

Claims 1, 3 to 7, 9 to 14, 16 to 22, and 24 remain pending. Claim 25 has been added.

The following remarks are additional to the remarks presented in the Amendment mailed August 18, 2008.

Claims 1 to 23 have been rejected under 35 U.S.C. 102(b) as being anticipated by WO 00/40620 to Skar et al. (Skar). The Action stated that for product-by-process claims, the burden is on the applicant to establish an obviousness difference when the product is in the prior art even if the process is different than in the prior art. The Action also stated that patentability of a product rests in the product formed rather than the method of production.

The rejection of claims 1, 3 to 7, 9 to 14, and 16 to 22 under 35 U.S.C. 102(b) in view of Skar is overcome. Independent claim 1 as amended requires that Y = C_{6-20} aryl or Y = $-SiR'_3$. In the instance of Y = $-SiR'_3$, Skar does not disclose a silicon-containing complex. Thus, claim 1 cannot be anticipated. In the instance of C_{6-20} aryl, Skar discloses a complex, such as at page 10, lines 6 to 18, in which both sigma ligands can be benzyl groups. Each of X_1 and X_2 can be the same or different and can be selected from the group containing halogen, methyl, benzyl, amido or hydrogen. To obtain a dibenzyl catalyst, it is necessary to select X_1 as benzyl and then also select the X_2 ligand as benzyl. Dibenzyl is therefore one of 15 possibilities of the sigma ligands in claim 1 of Skar. The other 14 possibilities do not fall within the scope of claim 1. Further, the examples of Skar disclose dichloro catalysts, not dibenzyl catalysts. On page 10, line 25, Skar recites that dichloro

complexes are preferred. Further at page 10, lines 31 to 33, Skar also discloses the possibility of changing a chlorine for an amido, benzyl or methyl group. At no point is there a specific suggestion that both chlorines should be removed. Skar really only contemplates the removal of one chlorine. It is submitted therefore that the selection of dibenzyl is not seriously contemplated by the Skar reference. Thus, claim 1 is novel in view of Skar.

Further, claim 1 as amended is nonobvious in view of Skar. The claimed invention relates to the formation of hafnium metallocene catalysts that exhibit high activity and possess long life spans, especially for use in multistage polymerisation processes. The inventors have surprisingly found that by replacing the commonly used sigma chlorine ligands with ligands in which no beta hydrogen atoms are present, e.g. a benzyl ligand or a methyltrimethylsilyl ligand, activation of the hafnium species is considerably improved, giving higher catalyst activities and resulting in improved processing behaviour and end product homogeneity. The catalysts of the claimed invention show longer life spans than conventional dichloro metallocenes, and, therefore, are of particular interest in multi-stage processes. This effect is shown in Example 12, which employs bis n-butylcyclopentadienyl hafnium dibenzyl, whereas comparative example 8 employs bis n-butyl cyclopentadienyl hafnium dichloride, the catalyst exemplifed by Skar. Under the same conditions and using the same carrier, the productivity of the dibenzyl species is much greater than that of the dichloride species (Table 3).

Improvements are also shown in table 4. Examples 14 and 15 show higher activities and larger life spans than comparative example 10 (the third entry in table 4 is example 15 not example

16). Example 16 shows better results than example 11 (example 16 is not comparative).

Improved productivity is especially useful in a two-stage polymerisation process as then in both stages a sufficient production rate can be obtained. The life spans of certain metallocene dichlorides such as the hafnium complex bis n-butyl cyclopentadienyl hafnium dichloride are short causing a drastic decrease in productivity especially in a two-stage process. In a process where the catalyst is being transferred from a first reactor to a second reactor, it is critical that the life span of the catalyst be long enough for the active species to persist in the second reactor, e.g., in the later stage of a loop/gas phase continuous polymerisation process. This is not achieved using metallocene dichloride compounds of the prior art. Conversely, the results shown in Table 4 show that productivity can be maximised for a long period.

The rejection of claims 2, 8, 15 and 23 under 35 U.S.C. 102(b) in view of Skar is moot since they are canceled.

Reconsideration of claims 1, 3 to 7, 9 to 14, 16 to 22, and 24 is deemed warranted in view of the foregoing, and allowance of said claims and new claim 25 is earnestly solicited.

Respectfully submitted,

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